Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Rapid Learning of Focused Cardiac Ultrasound for Early Identification of COVID-19 Complications: A Collaborative Effort

The SARS-CoV-2/COVID-19 pandemic has challenged health care systems across the United States. Patients affected by this novel coronavirus have an increased chance of suffering cardiac complications.[1,2] The first months of the pandemic limited formal sonography availability due to personal protective equipment (PPE) scarcity combined with risk of exposure. Thus, our objective was to create, execute, and appraise whether a focused cardiac ultrasound (FOCUS) curriculum could effectively teach hospital medicine faculty at an 882-bed safety-net academic hospital.

The curriculum was led by two FOCUS-trained clinicians in the Division of Hospital Medicine and an advanced imaging cardiology fellow. It was separated into three sequential phases: independent study, simulation-based practice, and bedside scanning. Precourse educational material included a 20-minute online video, a workshop handout, and a free online interactive website used by the Division of Cardiology for fellow training. Review of these materials was optional and self-directed.

The workshop was conducted at the University of Texas Southwestern Simulation Center over a 2-week period. It included hands-on training in simulated FOCUS with case-based modules. The two- to three-hour sessions were designed to maximize probe-in-hand practice. Five sessions per week were scheduled, maximizing flexibility and availability of the learners. Each workshop was limited to four learners and one instructor to maintain social distancing and maximize one-on-one instruction. Strict adherence to universal masking procedures and sterilization of simulation equipment were mandatory. All participants attended one simulation session. Training in basic cardiac ultrasound views was provided. We then further reinforced this content through bedside tutoring of FOCUS concepts by the instructors. The images were stored for remote image validation and use in e-consultation with cardiology. If the FOCUS identified pathology or was nondiagnostic and required further investigation, then a formal echocardiogram was batched with others to minimize PPE usage and sonographer risk.

Thirty-two hospital medicine faculty members participated in the training program. All trained faculty were provided a pre- and post-course anonymous survey that had 75% and 69% response rates, respectively. We saw a statistically significant improvement in respondents' knowledge of optimal positioning of patients for each view (Figure 1), a recognition of utility for the workshop, and a need for ongoing FOCUS education (Supplemental Table 1), which participants in similar studies have mentioned as well.[3,4]

Our experience yielded three conclusions: first, our learners quickly gained confidence in the acquisition of FOCUS images. Second, simulation provided us with a unique environment that made rapid training feasible as well as safe for both the learners and instructors. Finally, our workshop highlighted the importance of interdisciplinary efforts to overcome the challenges and barriers in clinical care that arise during a crisis, which has been highlighted recently.[5] The limitations of our experience included voluntary confirmation of images captured by trained faculty by cardiology, which meant that assessment of the quality of those images was not guaranteed unless captured images were submitted for validation.

In the months since the COVID-19 pandemic began and after the initial surge of patients that our hospital experienced, PPE supplies became more abundant and protocols for formal ultrasonography in COVID-19 patients were established. Thus, the use of FOCUS has diminished. However, as we enter another substantial surge of COVID-19 this winter, the likelihood of an overstretched system again highlights a role for rapid, multipronged, and interdisciplinary education in all aspects of patient care during a pandemic.

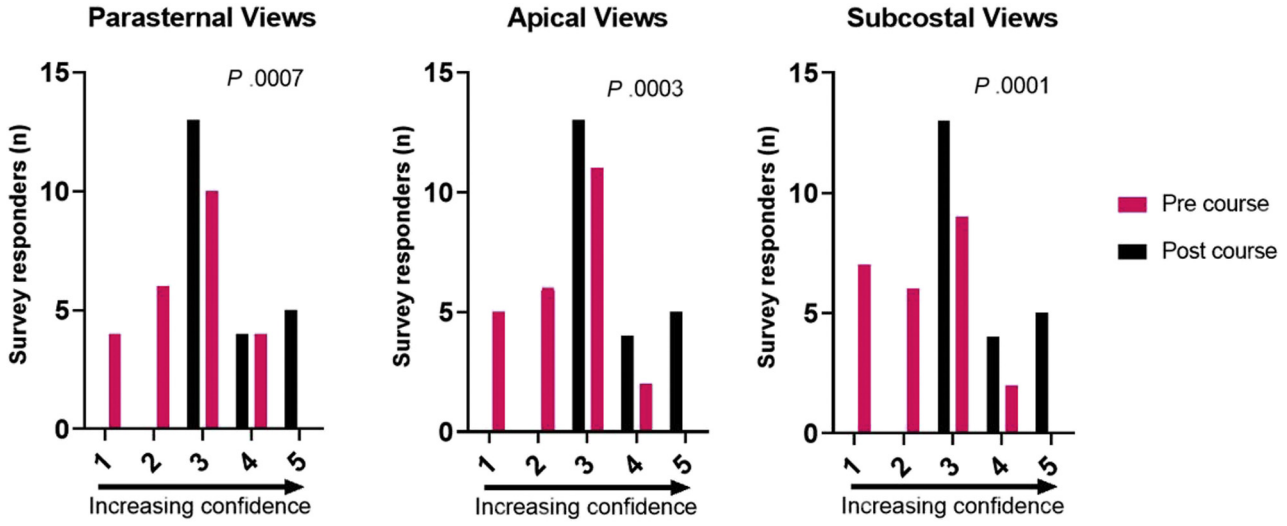

Figure 1 Self-reported confidence in scanning skills before and after the FOCUS course.

Conflicts of Interest: None.

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SUPPLEMENTARY DATA

Supplementary data related to this article can be found at https://doi.org/10.1016/j.echo.2021.01.013.

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